

Claims

- [c1] A marking apparatus for the percutaneous placement of an imaging marker at a predetermined location in a tissue mass to facilitate subsequent determination of the predetermined location, the marking apparatus comprising:
- a handle to be grasped by a user;
 - a cannula comprising:
 - a peripheral wall forming a lumen,
 - a proximal end carried by the handle,
 - a distal end terminating in a self-piercing tip, and
 - a lateral opening in the peripheral wall, which is open to the lumen;
 - a plunger having a distal end and slidably received within the lumen for movement between a ready position, where the distal end is spaced inwardly from the self-piercing tip to form a marker recess in communication with the lateral opening and sized to receive an imaging marker, and an expelled position, where the distal end is advanced a sufficient distance into the marker recess to expel a marker contained therein through the lateral opening.
- [c2] The marking apparatus according to claim 1, and further comprising at least one imaging marker contained within the marker recess.
- [c3] The marking apparatus according to claim 2, and further comprising multiple imaging markers contained within the marker recess.
- [c4] The marking apparatus according to claim 2, wherein the handle, cannula, and plunger are operably coupled such that they form a self-contained marking apparatus that can be easily and conveniently handled by a user to effect operation of the marking apparatus from the ready

position to an expelled position.

- [c5] The marking apparatus according to claim 4, wherein the cannula is rigid.
- [c6] The marking apparatus according to claim 5 wherein the distal end of the cannula is pointed to form the self-piercing tip.
- [c7] The marking apparatus according to claim 6, wherein the cannula is 13 gage or less.
- [c8] The marking apparatus according to claim 7 and further comprising a ramp on at least one of the plunger and cannula to aid in expelling an imaging marker.
- [c9] The marking apparatus according to claim 1 wherein the distal end of the cannula is pointed to form the self-piercing tip.
- [c10] The marking apparatus according to claim 1 and further comprising a ramp on at least one of the plunger and cannula to aid in expelling an imaging marker.
- [c11] The marking apparatus according to claim 10 wherein a ramp is located in the lumen adjacent the lateral opening.
- [c12] The marking apparatus according to claim 11 wherein the distal end of the plunger is flexible and is deflected toward the lateral opening by the ramp when the plunger is moved to the expelled position.
- [c13] The marking apparatus according to claim 10 wherein a ramp is located on the distal end of the plunger.
- [c14] The marking apparatus according to claim 1, wherein the handle, cannula, and plunger are operably coupled such that they form a self-

contained marking apparatus that can be easily and conveniently handled by a user to effect operation of the marking apparatus from the ready position to an expelled position.

- [c15] A method for percutaneously placing a marker at a predetermined location in a tissue mass using a self-piercing, side-ejecting, self-contained marking apparatus comprising a cannula defining a lumen and terminating in a self-piercing tip, with a lateral opening in communication with the lumen, and a plunger slidably received within the lumen for expelling a marker in the lumen through the lateral opening, the method comprising:
- inserting the cannula into the tissue mass by puncturing an exterior of the tissue mass with the self-piercing tip; and
- expelling the marker through the lateral opening by sliding the plunger within the lumen.
- [c16] The method according to claim 15 wherein the inserting step comprises locating the lateral opening near a predetermined location in the tissue mass where it is desired to be marked.
- [c17] The method according to claim 16 wherein the laterally opening is located beneath the predetermined location.
- [c18] The method according to claim 16 wherein the expelling step comprises expelling multiple markers into the tissue mass.
- [c19] The method according to claim 18 wherein at least one of the multiple markers is expelled at a different location in the tissue mass than another of the multiple markers.